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then corrected by adding or subtracting the calculated curvature of this trail. These residuals will no doubt at first sight appear large to those accustomed to work with instruments of long focal length, but it must be borne in mind that these same quantities expressed in linear measurement, which is really fairer for purposes of comparison, are extremely small. The unit of measurement used—namely, ·001 mm.—certainly represents the extreme limit of accuracy, if indeed it be not beyond it, that can be obtained from any stellar photograph. If a more liberal standard of accuracy were adopted the appearance of the residuals would be correspondingly improved. Thus taking the standard of the astrographic plates and carrying the measurements, as is done with them, only to a limit of ·005 mm., it will be seen at once that nearly all the residuals would be zero.

It may further be noted that, as any distortion which is linear in r will disappear in the reduction to rectilinear co-ordinates, we are entitled to assume that value of r which will make the sum of the residuals a minimum, provided always that there be sufficient stars on the plate to give a real value of r. In this example, as all the residuals are practically within the limits of possible errors of measurement, a correction of the assumed value of r would be unnecessary and hardly justifiable.

List No. 12 *of Nebulæ discovered at Lowe Observatory, Echo Mountain, California, for* 1900·0.

By Lewis Swift.

No.	Date 1898.	R.A. h	 m	 s	Dec. °	 ′	Description.
1	May 24	0	4	10	−32	49·9	vF, vS, R, unequal D ✱ n.
2	24	0	5	30	− 7	58·3	eeeF, vS, R, bet $7\frac{1}{2}^{m}$ ✱ n and 9^{m} ✱ s, eee dif.
3	22	0	29	40	−30	32·9	eeeF, S, R, wide D ✱ close p point to it. Not 174.
4	Nov. 19	0	53	0	−17	?	pF, vS, $7\frac{1}{2}^{m}$ ✱ np, F ✱ near s p.
5	1897. May 24	1	0	0	−27	56·4	eF, pS, close to 3 st like belt of Orion.
6	Oct. 12	1	4	0	−29	6·6	cB, pS, R, 3 8^{m} st near.
7	Sept. 20	1	28	0	−14	0·8	eeF, R, S, lE, 8^{m} ✱ n, e dif.
8	Oct. 10	1	54	15	−28	16·5	eeF, S, R, 8^{m} ✱ S, lf.
9	Previous	11	49	?	− 5	?	eeF, lE, v small, 3 B st in line n, also circle of st n. Saw it twice, failed once.
10	June 24	12	15	5	+61	15·0	eeeF, S, $7\frac{1}{2}$ and 5^{m} st in field, p of 2. One of my faintest nebulæ.
11	24	12	15	35	+61	15·0	vF, pL, R, $7\frac{1}{2}^{m}$ ✱ south, f of 2.
12	Aug. 19	15	29	?	+ 6	21·0	eeeF, L, R, eee dif.
13	19	15	50	?	+ 6	19·0	eF, S, R, bet 8^{m} ✱ f, and curve of st p.
14	16	19	41	20	−33	34·0	eeeF, eeS, eee dif sev F st near.

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No.	Date		R A.			Dec.		Description.
	1897.		h	m	s	°	′	
15	Sept.	11	19	59	0	−44	19·3	eF, S, R, 3 or 4 st f, form with the neb, a circle, sp of 2.
16		17	19	59	30	−43	59·3	vF, pS, R, bet a wide D * f and a * np, nf of 2.
17		11	20	17	25	−38	33·9	eF, pS, R, bet 2 $8\frac{1}{2}^{m}$ st nf and sp.
18		8	20	19	0	−30	11·8	vF, C, S, R, 2 st nr sf, point to it. Sp of 2.
19		8	20	19	25	−30	1·8	eeF, C, L, R, bet 2 groups of B st sf, and np, nf of 2.
20	Aug.	18	20	22	20	−32	1·9	pB, pS, R, nearly bet 2 st with dist. companion.
21	Sept.	11	20	24	0	−38	32·9	eF, pS, R, bet 2 $8\frac{1}{2}^{m}$ st nf and sp.
22	July	26	20	34	10	−30	11·6	eeF, eS, eE, F * with dist. com. nr sf, point to it, np of 2.
23		26	20	34	30	−30	12·6	eeeF, vS, cE, ee dif, sf of 2.
24	Sept.	8	20	44	10	−30	11·8	vF, pS, R, 8^{m} * in margin of field n.
25	Aug.	19	21	18	0	−41	3·3	vF, vS, R, * with dist. com. n and s.
26	July	24	21	36	30	−39	27·0	eeeF, vS, R, 5 or 6 st nr sp, v dif.
27	Sept.	15	21	42	55	−34	7·0	eeF, S, R, wide D * points to it, sev pB st sf and np.
28	Aug.	18	21	44	50	−31	26·8	vF, S, lE.
29	July	23	21	53	0	−39	52·8	vF, L, lE, 2 B st point to it, nearest in contact.
30	Sept.	8	21	53	0	−27	51·5	eF, S, R, $6\frac{1}{2}^{m}$ * same parallel follows 63^{s}.
31	July	26	21	57	0	−35	27·1	pB, pS, R, 3 st in line nr nf.
32	Oct.	16	21	57	26	−34	17·0	pF, pS, R, in vacancy.
33	July	26	22	7	25	−37	22·5	vF, L, R, * close S, B * sp.
34	Sept.	20	22	9	30	−36	20·3	pB, C, S, F * in contact sf, sev pB st form segment of large circle.
35	July	19	22	9	35	−37	22·4	pF, pS, lE, bet 2 st in meridian, $8\frac{1}{2}^{m}$ * sp, np of 2.
36		19	22	10	25	−37	20·4	eeF, S, R, F * nr p, 8^{m} * np, sf of 2.
37		26	22	18	5	−27	58·5	eF, pS, R, 8^{m} * p.
38	Oct.	6	22	26	0	−25	52·6	eeF, pS, R, bet 2 st, a dozen st in margin of field f, form semicircle 4 st np a curve, one D, sp of 2.
39		6	22	26	10	−25	10·3	eeeF, pL, R, no * nr, trapezium, nf of 2.
40	July	19	22	34	20	−30	31·6	eeeF, eeeS, eeeE, eee dif, a line. 8^{m} * np.
41		19	22	49	0	−37	53·5	eeF, pS, R, 9^{m} * nr sp, ee dif.
42	Aug.	22	22	49	40	−34	22·0	eeeF, pS, R. bet a * p and a wide D nf, 8^{m} * f, eee dif, np of 2.
43		22	22	52	30	−34	17·0	pF, pS, vE, bet 2 st.
44	July	26	23	13	0	−10	50·6	eF, S, R, 3 or 4 F st nr sp.
45		24	23	47	0	−29	11·4	vF, eS, R, 3 st in line p, one D.

Lowe Observatory:
1899 *July* 9.

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The Magnitude of η Argûs, 1899. By R. T. A. Innes.

The comparison stars for *η Argûs* given in the *Uranometria Argentina* only go to the 7·60 magnitude, and fainter magnitudes are now required.

For the present it has been found sufficient to add the star C.G.A. Cluster Catalogue, No. 121, there given as mag. = 8·0 red. I have used this magnitude; the colour is about 8 on Chandler's scale. The other comparison star used in the following observations was Gilliss 1332, mag. 7·60; colour, full yellow = 4 on Chandler's scale.

Both of these stars are most conveniently situated with reference to *η Argûs*, which is between them in position, and also at present between them in magnitude and colour.

With the 7-in. Merz equatorial :—

1899 June	10	mag. = 7·6	
	11	7·8	colour = 8.
	13	7·75.	
	18	7·7	colour = 6.
1899·5		mag. 7·71	colour 7.

To compare we have :—

1897·2	7·60	See, A.J. 399, p. 119.
1896·4	7·58	Innes, M.N. lvii. p. 115.
1886·2	7·60	Finlay, „ xlvi. p. 340.

All in U.A. scale.

Royal Observatory, Cape of Good Hope,
1899 *June* 20.

Tempel's Comet (1873 II–*c* 1899), *observed at Grahamstown.*
By Major L. A. Eddie.

1899, August 15.—Comet well seen, though Moon too bright for detecting much physical structure. Head sharply defined on preceding edge, narrow in anterior portion, spreading out immediately at a wide angle, and very much diffused posteriorly. Condensation in central portion of head. Colour pale white, but moonlight too bright to detect any particular tint. This comet did not appear fluffy, like Swift's comet observed at my observatory in March last, but with a sharp outline on advancing edge. Though faint, stood power of 100 well.

August 17.—Moon very bright, and atmosphere hazy, so comet only dimly visible.